IN THE CLAIMS:

1. (Currently amended) An implantable medical device, comprising:

means for sensing a plurality of events prior to delivering a therapy;

means for detecting whether there is ~~an~~ a sudden increase in ~~the~~ a frequency of first events of the plurality of events corresponding to triggering an onset of a second event of the plurality of sensed events, the second event being a different event type than the first events;

means for adjusting parameters associated with delivery of ~~a~~ the therapy in response to the detected sudden increased frequency of first sensed events; ~~and~~

means for ~~delivering~~ initiating the therapy ~~using the adjusted parameters~~ in response to the detected increased frequency of first sensed events, the initiated therapy delivered using the adjusted parameters, wherein the sudden increase in frequency of first events corresponds to an increase in frequency detected over a time period of up to approximately one minute;

means for determining, in response to an increase in the frequency of the first events not being detected, whether a predetermined number of the second event have occurred for which the therapy using the adjusted parameters has not been delivered; and

means for automatically adjusting parameters associated with detecting whether there is an increase in the frequency of first events in response to the predetermined number of the second event occurring for which the therapy has not been delivered.

2. (Original) The device of claim 1, wherein the first events correspond to premature atrial contractions and the means for detecting whether there is an increase in the frequency of first events determines whether a predetermined number of premature atrial contractions occur within a predetermined time window.

3. (Original) The device of claim 1, wherein the means for adjusting parameters associated with delivery of the therapy adjusts one of a rate of delivery of the therapy and a duration of delivery of the therapy at the adjusted rate.

4. (Cancelled)

5. (Previously presented) The device of claim 1, wherein the first events correspond to premature atrial contractions and the means for detecting whether there is an increase in the frequency of first events determines whether a predetermined number of premature atrial contractions occur within a predetermined time window, and wherein the means for adjusting parameters associated with detecting an increase in the frequency of first sensed events adjusts one of the predetermined number of premature atrial contractions and the predetermined time window.

6. (Original) The device of claim 3, further comprising:

means for determining whether the second event is detected subsequent to delivery of the therapy; and

means for increasing the delivery rate of the therapy in response to the second event being detected.

7. (Previously presented) The device of claim 3, further comprising:

means for determining whether the second event is detected subsequent to delivery of the therapy;

means for determining whether a predetermined number of the first event occur within a predetermined time period subsequent to delivery of the therapy; and

means for increasing one of the delivery duration and the delivery rate in response to the predetermined number of the first event occurring within the predetermined time period.

8. (Original) The device of claim 3, further comprising:

means for determining whether the second event is detected during delivery of the therapy; and

means for increasing one of the delivery duration and the delivery rate in response to the second event being detected during delivery of the therapy.

9. (Previously presented) The device of claim 2, further comprising:

means for determining whether the therapy has been delivered a first predetermined number of times;

means for determining whether the second event was detected subsequent to the delivery of the therapy for a second predetermined number of the first predetermined number of times; and

means for automatically adjusting one of the number of premature atrial contractions and the time window in response to the second event not being detected subsequent to the delivery of the therapy the second predetermined number of times.

10. (Original) The device of claim 3, further comprising:

means for determining whether the therapy has been delivered a predetermined number of times;

means for determining whether the second event was detected subsequent to the delivery of the therapy; and

means for adjusting one of the delivery duration and the delivery rate in response to the second event not being detected subsequent to the delivery of the therapy.

11. (Original) The device of claim 2, further comprising:

means for determining whether the therapy has been delivered more than a predetermined time threshold; and

means for automatically adjusting one of the number of premature atrial contractions and the time window in response to the therapy being delivered more than the predetermined time threshold.

12. (Currently amended) A method of controlling delivery of a therapy in an implantable medical device, comprising:

sensing a plurality of events prior to delivering the therapy;

detecting whether there is ~~an~~ a sudden increase in the frequency of first events of the plurality of events corresponding to triggering an onset of a second event of the plurality of sensed events, the second event being a different event type than the first events;

adjusting parameters associated with delivery of the therapy in response to the detected sudden increased frequency of first sensed events; ~~and~~

~~delivering~~ initiating the therapy ~~using the adjusted parameters~~ in response to the detected sudden increased frequency of first sensed events, the initiated therapy delivered using the adjusted parameters, wherein the sudden increase in frequency of the first events corresponds to an increase in frequency detected over a time period of up to approximately one minute[[,]];

determining, in response to an increase in the frequency of the first events not being detected, whether a predetermined number of the second event have occurred for which the therapy using the adjusted parameters has not been delivered; and

automatically adjusting parameters associated with detecting whether there is an increase in the frequency of first events in response to the predetermined number of the second event occurring for which the therapy has not been delivered.

13. (Original) The method of claim 12, wherein the first events correspond to premature atrial contractions and detecting whether there is an increase in the frequency of first events comprises determining whether a predetermined number of premature atrial contractions occur within a predetermined time window.

14. (Original) The method of claim 12, wherein adjusting parameters associated with delivery of the therapy comprises adjusting one of a rate of delivery of the therapy and a duration of delivery of the therapy at the adjusted rate.

15. (Cancelled)

16. (Previously presented) The method of claim 12, wherein the first events correspond to premature atrial contractions and detecting whether there is an increase in the frequency of first events comprises determining whether a predetermined number of premature atrial contractions occur within a predetermined time window, and wherein adjusting parameters associated with detecting an increase in the frequency of first sensed events comprises one of adjusting the predetermined number of premature atrial contractions and the predetermined time window.

17. (Original) The method of claim 14, further comprising:

determining whether the second event is detected subsequent to delivery of the therapy; and

increasing the delivery rate of the therapy in response to the second event being detected.

18. (Previously presented) The method of claim 14, further comprising:

determining whether the second event is detected subsequent to delivery of the therapy;

determining whether a predetermined number of the first event occur within a predetermined time period subsequent to delivery of the therapy; and

increasing one of the delivery duration and the delivery rate in response to the predetermined number of the first event occurring within the predetermined time period.

19. (Original) The method of claim 14, further comprising:

determining whether the second event is detected during delivery of the therapy; and

increasing one of the delivery duration and the delivery rate in response to the second event being detected during delivery of the therapy.

20. (Previously presented) The method of claim 13 further comprising:

determining whether the therapy has been delivered a first predetermined number of times;

determining whether the second event was detected subsequent to the delivery of the therapy a second predetermined number of times of the first predetermined number of times; and

adjusting one of the number of premature atrial contractions and the time window in response to the second event not being detected subsequent to the delivery of the therapy the second predetermined number of times.

21. (Original) The method of claim 14, further comprising:

determining whether the therapy has been delivered a predetermined number of times;

determining whether the second event was detected subsequent to the delivery of the therapy; and

adjusting one of the delivery duration and the delivery rate in response to the second event not being detected subsequent to the delivery of the therapy.

22. (Original) The method of claim 13, further comprising:

determining whether the therapy has been delivered more than a predetermined time threshold; and

adjusting one of the number of premature atrial contractions and the time window in response to the therapy being delivered more than the predetermined time threshold.

23. (Currently amended) A computer-readable medium having computer-executable instructions for performing a method, comprising:

means for sensing a plurality of events prior to delivering a therapy;

means for detecting whether there is ~~an~~ a sudden increase in the frequency of first events of the plurality of events corresponding to triggering an onset of a second event of the plurality of sensed events, the second event being a different event type than the first events;

means for adjusting parameters associated with delivery of the therapy in response to the detected sudden increased frequency of first sensed events; ~~and~~

means for ~~delivering~~ initiating the therapy ~~using the adjusted parameters~~ in response to the detected sudden increased frequency of first sensed events, the initiated therapy delivered using the adjusted parameters, wherein the sudden increase in frequency of the first events corresponds to an increase in frequency detected over a time period of up to approximately one minute[[,]];

means for determining, in response to an increase in the frequency of the first events not being detected, whether a predetermined number of the second event have occurred for which the therapy using the adjusted parameters has not been delivered; and

means for automatically adjusting parameters associated with detecting whether there is an increase in the frequency of first events in response to the

predetermined number of the second event occurring for which the therapy has not been delivered.

24. (Currently amended) A method of controlling delivery of a therapy in an implantable medical device, comprising:

sensing a plurality of events prior to delivering the therapy;

detecting whether there is a sudden increase in the frequency of first events of the plurality of events corresponding to triggering an onset of a second event of the plurality of sensed events, the second event being a different event type than the first events;

adjusting parameters associated with delivery of the therapy in response to the detected increased frequency of first sensed events; ~~and~~

~~delivering~~ initiating the therapy in response to the detecting of the sudden increase in the frequency of first events, the initiated therapy delivered using the adjusted parameters, wherein the sudden increase in frequency of the first events corresponds to an increase in frequency detected over a time period of up to approximately one minute, and the first events correspond to premature atrial contractions,

determining, in response to an increase in the frequency of the first events not being detected, whether a predetermined number of the second event have occurred for which the therapy using the adjusted parameters has not been delivered; and

automatically adjusting parameters associated with detecting whether there is an increase in the frequency of first events in response to the predetermined number of the second event occurring for which the therapy has not been delivered.

25. (Currently amended) An implantable medical device, comprising:

electrodes for receiving cardiac signals and delivering pacing pulses to a patient's heart;

sensing circuitry for sensing a plurality of events from the cardiac signals prior to delivering a therapy;

output circuitry for generating pacing pulses delivered by the electrodes; and

a processor coupled to the sensing circuitry and the output circuitry and configured to detect whether there is ~~an~~ a sudden increase in the frequency of first events of the plurality of events corresponding to triggering an onset of a second event of the plurality of sensed events, and control the output circuitry to adjust a therapy parameter from a programmed value and ~~deliver~~ initiate a the therapy for preventing the second event in response to the detected sudden increased frequency of first sensed events, the initiated therapy delivered using the adjusted therapy parameter, the sudden increase in frequency of first events corresponding to an increase in frequency detected over a time period of up to approximately one minute;

the processor further configured to determine, in response to an increase in the frequency of the first events not being detected, whether a predetermined number of the second event have occurred for which the therapy has not been delivered using the adjusted therapy parameter, and adjust parameters associated with detecting whether there is an increase in the frequency of first events in response to the predetermined number of the second event occurring for which the therapy has not been delivered using the adjusted therapy parameter.

26. (Previously presented) The implantable medical device of claim 25 wherein detecting whether there is an increase in the frequency of first events comprises determining whether a coupling interval of a most recent first event is shorter than a coupling interval of a previous first event.

Please ADD the following NEW claim:

27. (New) A method of controlling delivery of atrial overdrive pacing therapy in an implantable medical device, comprising:

sensing an atrial rhythm prior to delivering the atrial overdrive pacing therapy;

detecting from the sensed atrial rhythm whether there is a sudden increase in a frequency of premature atrial contractions corresponding to triggering an atrial tachycardia, wherein the sudden increase in the frequency of the premature atrial contractions corresponds to an increase in the frequency detected over a time period of up to approximately one minute;

increasing an atrial overdrive pacing therapy duration from a programmed value in response to the detected sudden increased frequency of premature atrial contractions;

initiating the atrial overdrive pacing therapy in response to the detected sudden increased frequency of premature atrial contractions;

delivering the initiated atrial overdrive pacing therapy for the increased duration;

determining, in response to an increase in the frequency of premature atrial contractions not being detected, whether a predetermined number of atrial tachycardias has occurred for which the atrial overdrive pacing has not been delivered for the increased duration; and

automatically adjusting parameters associated with detecting whether there is an increase in the frequency of atrial premature contractions in response to the predetermined number of the atrial tachycardias occurring for which the atrial overdrive pacing has not been delivered for the increased duration.